DATA ENTRY, TRANSFER AND CONVERSION FOR HUSKY HUNTER FIELD COMPUTER, MS-DOS PC AND PRO-350

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Data Entry, Transfer and Conversion for Husky Hunter field computer, MS-DOS PC and PRO-350

1. Introduction

This report primarily outlines the use of the Husky Hunter field computer for data capture and transfer to the VAX network, conversion of data to Datatrieve format and merging of new data and existing database files. This also has application to the MS-DOS ('IBM compatible') PCs, file conversion and software differences are outlined. Procedures for file conversion and transfer of PRO-Datatrieve files to/from the PRO-350 are also outlined.

2. Husky Hunter Field Computer

Husky Hardware

The Husky Hunter is a robust and compact computer designed for data collection in the field. Consequently it is shock and waterproof but it is not recommended to put either of these features to the test. This computer is equipped with a power pack, carry-case, crossed RS-232 communications leads and the users manual.

The following comments are intended to get you started but there is no substitute for reading the Husky manual.

1. Power on/of - this computer has an autopower off facility and will normally turn itself off after five minutes.

2. RS-232 port - is provided for communications - loading and down-loading.

3. Power pack is provided - a warning system for low battery power is installed.

4. Virtual screen size of 80 characters, 24 lines with 40 character, 6 line window.

5. Keyboard - QWERTY keyboard layout with the following special features, also see Chapter 2 of the Husky manual.

   * Function(FN) keys as marked on the screen and invoke user facilities. Other special keys are as follows:

   * LBL/INS key - CTL LBL/INS - enables/disables caps lock
     SHIFT LBL/INS enables/disables FN key display
   * ESC/BRK key - is the panic key to crash programmes - SHIFT ESC/BRK. This will work unless it has been disabled by the program running.

   * FN 8 (KEYS) invokes a different set of function keys which can be reset by issuing the KEYS a second time.

Operating System and System Software

1. The Hunter uses a CP/M operating system and conforms with many of the conventions of other systems e.g. RT-11, VMS etc. There are some common commands which CP/M does not support, for example COPY, other commands have unique syntax, for example REN for renaming files. A copy of a file may be created by editing an existing file and saving it to a new name. Chapter 3 in the Husky Manual is a very useful guide and is recommended reading.

2. BASIC interpreter is installed and invoked by BAS. Programs are loaded, saved etc. using the FN keys or typed in the usual manner. Exiting from the BAS is achieved by typing SYSTEM or using the FN key.

3. Basic programs may be executed outside the Basic Interpreter after loading and saving in the interpreter with filename extension .HBA and are executed by typing the entire filename, for example ENTER.HBA

4. Files with a .COM extension are object code files executable by typying the filename prefix only, for example KERMIT.

5. EDIT facility - is very similar to WORDSTAR, CTL G deletes the character immediately above the cursor and SHIFT DEL/BS deletes the character immediately to the left of the cursor. A simple FIND command allows one-off searches in the advance mode only. One feature of this editor which must be remembered is that it does not automatically insert characters into text it defaults to an overwrite mode - insert can and must set on by FN 3. Caps lock may be achieved in two ways - CTL LBL or FN 1.

6. COMS - sets the port receive and transmit parameters and requires checking and setting. These are currently set at 4800 baud.

7. KERMIT - is the communications software which allows the Husky to transmit and receive files to/from other devices, for example, Husky to DOS PC, Husky to VAX and vice versa.

8. CLCK - sets the internal clock

9. The Hunter has graphics capabilities, given the software to drive it - demonstration software is provided with the machine. Type DIR to list existing files.

All the above information is set-out in more detail in the manual which is well written and easy to follow.

3. SPG1 Data Entry for Husky Hunter and MS-DOS PC

A program ENTER.BAS (Appendix 1) has been written for the entry of SPG1

data. The program calls an input file INPUT.DAT (Appendix 2) for the SPG1 card line numbers and the field names for entry. The data entered for each field is written to an output file OUTPUT.DAT (Appendix 3) which is appended every time the program is run. Programming changes for BASICA or GWBASIC versions (DOS PCs) of ENTER.BAS are given in Appendix 4. A disk of user programs is available upon application.

The program does not validate any data entered this is done at a later stage. The program has several default values for the first line only. These are SPG1, project number and author fields. These values may be edited for each specific survey. The input file may be edited to prompt for a partial set of fields. In order that an uncorrupted version of both the source program and input program is maintained these are also held as ENTERBAS.BAK and INPDAT.BAK respectively. To make a copy simple edit and save to the working filenames.

Program Features

1. The first line of the the output file has been treated differently from the rest of the 'card':

```
PRINT#2, "%1 SPG1:";A$;":1234:";B$;":KWV MDL::";
```

   The line has four default values SPG1, project number, author/s, lab number; A$ is the profile number and B$ is the date. The last field is for LABNO, however this is not prompted for since only a hand-full of profiles for any survey will have lab numbers and these may be edited into the output file.

2. In order to set-up the ENTER program to individual needs the following steps should be taken:

   (a) Edit ENTER.BAS to change line 70 for specific survey information. Save this file by CTL 6 <RET>.
   (b) Edit INPUT.DAT to delete fields which are not required. Several points should be noted, first line fields starting with %1 should not be deleted. Secondly, horizon fields such as those listed in the IF statements from line 1250-1355 have a corresponding block of input lines for program control, consequently if, for example, PEDCOLOUR is not required then the following lines should be deleted from INPUT.DAT:

```
"%0 ","PEDCOLOUR"
"%0 ",3
"%22 ","PEDHUE"
"%23 ","PEDVALUE"
"%24 ","PEDCHROMA"
```

   The file should then be saved. The system is then ready for use.

   (c) The program may now be loaded into the Basic Interpreter by typing:

```
> BAS
Hunter Basic Interpreter
READY
LOAD"ENTER.BAS"..... loads this program into memory
READY
RUN..... the program will run, or type
SAVE"ENTER.HBA"..... saves executable file, then type
SYSTEM..... to exit from Basic Interpreter
....
> ENTER.HBA..... To execute program
```

After running ENTER.HBA the program will remain inside the Basic interpreter, consequently type SYSTEM to exit to DCL level or RUN to execute the program again. This system is virtual identical for BASICA or GWBASIC

3. Caps lock is not essential but recommended for data entry since designation is the only field which requires lowercase letters - both the Husky and most DOS PCs override caps lock by using the SHIFT key.

4. Data Entry for PRO-350

Data entry instructions for PRO-DTR are given in Appendix 9.

5. Transferring Standard 'text' Files using KERMIT

Husky KERMIT uses most the same protocols as any other version of KERMIT. The COMS command at 'DCL' level allows the transmit/receive parameters to be changed. The most important parameter to set is baud rate. Appendix 7 contains a brief outline of KERMIT commands as a memory-jogger.

Husky/MS-DOS PC/PRO-350 to VAX

To send/receive files to/from the VAX (host computer):

1. Plug in VAX/ terminal line
2. Invoke KERMIT on the Husky, PC or PRO - check baud rates
3. CONNECT
4. CTL P T or RET to login
5. Set desired subdirectory, i.e, $ SET DEFAULT [SRGSWSM.TRANSFER]
6. Invoke VAX KERMIT
7. Put into SERVER mode
8. Escape to local computer (CTL] C) and type 'SEND filename' to send files to the VAX, or, 'GET filename' to receive files from

the VAX.

Husky to MS-DOS PC/PRO-350

To send/receive files to/from the PC (host computer):

1. Plug in crossed RS-232 lead into communications ports
2. Invoke KERMIT on the Husky/PC
3. Invoke host KERMIT
4. Put into local/host into RECEIVE/SEND mode
5. Exit from both KERMIT sessions.

N.B. One of the problems with the transfer of files from the Husky to the DOS PCs or RT-11 system is that the KERMIT software writes the files without linefeeds, consequently a simple BASIC program has been written to correct this problem (Appendix 5). This program should be run to correct the transferred files.

6. PRO-350 Datatrieve SPG1 Files to VAX using KERMIT-11

Conversion of PRO Datatrieve files

Transfer of PRO-DTR files using KERMIT-11 is now possible after the files have been run through a conversion program. A disk is available with two installable applications, that is, SPGCNV and KERMIT-11.

Installing an application is achieved through the menu driven Environment Services selection. It is recommended that the applications are installed into the Main Menu Applications for ease of access. The existing version of KERMIT is now redundant and can be deleted from the system through Environment Services.

To run the SPG1 file conversion program set directory to the one containing SITES.DAT and HORIZONS.DAT (usually [USERFILES]) and select the installed application. The program create files SITES.PRO and HORIZONS.PRO which are compatible for file transfer to the VAX.

Transferring converted PRO-DTR files

To transfer SITES.PRO and HORIZONS.PRO select KERMIT-11 at main menu and follow the steps outlined below:

1. Check baud rate, if incorrect, type SET BAUD (number)
2. Type - CONNECT
3. Login to VAX
4. Set directory to appropriate transfer subdirectory.

5. Invoke VAX KERMIT

6. Type - SET FILE BLOCK

7. Type - SERVER

8. Escape back to PRO-350

9. Type - SET FILE BINARY

10. Type - SEND SITES.PRO

11. Type - SEND HORIZONS.PRO

12. Type - FINISH to kill server, or BYE to logoff.

7. Data Conversion to SPG1 Format on the VAX

Standard 'text' Files from Husky or MS-DOS PC

Once OUTPUT.DAT has been transferred and checked for bugs, it may be erased from the Husky. Husky KERMIT appears to send a bit of rubbish at the end of files which must be edited out before any conversion is possible. The rubbish usually takes the form of several Z's.

The conversion of colon type data files to SPG1 files is achieved by using a program SPGDTR, which prompts for input and output files. The input file in this case is OUTPUT.DAT (an unfortunate choice!) and the output file from the program could be called CONVRT.COM. An example of CONVERT.COM is given in Appendix 6. The original data must be clean before passing to the next step, therefore if errors are detected edit the original data file and rerun SPGDTR.

To submit CONVRT.COM to a queue, type

```
$ SUBMIT/QUEUE=SLOW/NOPRINT/AFTER=17:00:00 [username.subdirectory]CON
```

The /AFTER qualifier is not necessary but processing is cheaper after 5pm.

If SPGDTR runs free from errors CONVRT.COM may now be submitted to batch job for conversion into SPG1 OLDHORIZONS.DAT and OLDSITES.DAT files which will be written into the top level [username] directory unless the command file is edited to specify the [username.TRANSFER] subdirectory. The choice of these filenames was deliberate to eliminate the possibility of overwriting existing Datatrieve files. It is suggested that conversion of files is kept to one subdirectory for safety. The CONVRT.LOG file will also show any errors detected in Datatrieve which should be fixed in the original data file, rerun SPGDTR and resubmit CONVRT.COM.

8. Writing Transferred Data into a Database

Husky/ MS-DOS derived data

To incorporate newly transferred data into an existing SPG1 database SITES.DAT and HORIZONS.DAT must first be created in the transfer subdirectory. This can be done by:

```
$ CREATE/FDL=[SRGSDTR.SOIL_DATA]SITES
$ CREATE/FDL=[SRGSDTR.SOIL_DATA]HORIZONS
```

N.B: If these files already exist they will be overwritten and existing data lost. After including transferred data into the main database deletion of files in the transfer subdirectory is desirable.

To incorporate the new files into the main database

1. Set directory to [username.transfer]

2. Use :OLDINSERT in Datatrieve. This procedure reads OLDSITES.DAT and OLDHORIZONS.DAT and writes them to SITES.DAT and HORIZONS.DAT.

3. Set directory to [username.main_database]

4. Follow the :OPEN_PEEK and :COPY_PROFILES procedures as outlined in Appendix 10.

PRO-350 Derived data files

1. Follow steps 1, 3, 4 as described above, however for step 2,

2. The sequential files SITES.PRO and HORIZONS.PRO should be on your current directory. These files can be accessed as the Datatrieve domains PROSITES and PROHORIZONS. You can load into your main database by using :PROINSERT in Datatrieve.

Once all the profiles have been copied successfully the files in the [username.TRANSFER] subdirectory may be deleted ready for the next transfer. Appendix 8 outlines briefly the steps to taken from data entry to final incorporation into an existing database on the VAX.

Appendix 1 - ENTER.BAS source program - Husky version

```
5 MAXFILES=2
7 ON POWER RESUME
9 ON ERROR GOTO 10000
10 OPEN "INPUT.DAT" FOR APPEND AS 2
15 OPEN "OUTPUT.PMT" FOR INPUT AS 1
30 PRINT "AUGER DATA CAPTURE PROGRAM - 1987"
35 PRINT "               by"
40 PRINT "         W S McDONALD  "
41 PRINT " "
42 INPUT#1,L$,P$
44 PRINT "Enter ";P$;
46 INPUT A$
50 INPUT#1,L$,P$
51 INPUT#1,L$,P$
52 PRINT "Enter ";P$;
55 INPUT B$
60 INPUT#1,L$,P$
61 INPUT#1,L$,P$
70 PRINT#2,"%1 SPG1:";A$;":1234:";B$;":KWV MDL::";
80 INPUT#1,L$,P$
85 IF EOF(1) THEN GOTO 9990
90 IF L$<>D$ THEN PRINT#2,""
100 IF P$="HORIZONS DATA" THEN GOTO 1180
110 PRINT "Enter ";P$;
120 INPUT A$
130 IF L$<>D$ THEN GOTO 140 ELSE GOTO 160
140 E$=L$+A$+":"
145 PRINT#2,E$;
150 GOTO 170
160 PRINT#2,A$;":";
170 D$ = L$
200 GOTO 80
1180 PRINT "Number of horizons:";
1190 INPUT X
1200 IF X>9 THEN GOTO 1210 ELSE GOTO 1218
1210 PRINT "Limit of 9 horizons. Please re-enter number of horizons:";
1215 GOTO 1190
1218 PRINT 'S=',S
1220 IF S=1 THEN GOTO 1230
1221 DIM R$(9,15)
1222 DIM S$(9,54)
1223 DIM T$(9,15)
1224 DIM U$(9,54)
1225 DIM V$(9,15)
1226 DIM W$(9,15)
1230 INPUT#1,L$,P$
1240 Z=0
1250 IF P$="THICKNESS" THEN GOSUB 3000
1260 IF P$="COLOUR" THEN GOSUB 4000
1270 IF P$="PEDCOLOUR" THEN GOSUB 6000
1280 IF P$="RUBCOLOUR" THEN GOSUB 6000
1290 IF P$="MOTTLES" THEN GOSUB 5000
```

```
1295 IF P$="SEC_MOTTLES" THEN GOSUB 5000
1300 IF P$="TEXTURE" THEN GOSUB 4000
1310 IF P$="STRUCTURE" THEN GOSUB 4000
1320 IF P$="COATINGS" THEN GOSUB 5000
1330 IF P$="PANS" THEN GOSUB 4000
1340 IF P$="STONES" THEN GOSUB 5000
1345 IF P$="ROOTS" THEN GOSUB 5000
1350 IF P$="BOUNDARIES" THEN GOSUB 6000
1355 IF P$="NOTES" THEN GOTO 9980
1360 IF Z=0 THEN GOSUB 2000
1400 PRINT " "
1500 GOTO 1230
2000 REM Subroutine for single horizon characteristcs
2005 FOR J=1 TO X
2010 PRINT "Enter hor ";J;P$;
2020 INPUT A$
2025 IF J=1 THEN PRINT#2,L$;
2030 IF J=X THEN PRINT#2,A$;":" ELSE PRINT#2,A$;":";
2033 NEXT J
2035 Z=1
2040 RETURN
3000 REM Subroutine for horizon thickness
3005 PRINT P$
3010 INPUT#1,L$,P$
3022 PRINT "Enter ";P$;
3028 INPUT T
3030 INPUT#1,L$,P$
3035 FOR I=1 TO X
3050 PRINT "Enter hor ";I;P$;
3060 INPUT B
3070 H=B-T
3075 IF I=1 THEN PRINT#2,"%17 ";
3080 IF I=X THEN PRINT#2,T;",";B;":" ELSE PRINT#2,T;",";B;":";
3090 T=B
3100 NEXT I
3105 Z=1
3110 RETURN
4000 REM Subroutine for multiple part horizon properties
4002 PRINT P$
4004 INPUT#1,L$,M
4010 FOR L=1 TO M
4020 INPUT#1,W$(L),T$(L)
4030 NEXT L
4040 FOR J=1 TO X
4050 FOR K=1 TO M
4060 PRINT "Enter hor";J;T$(K);
4070 INPUT R$(K)
4080 S$(K) = S$(K)+R$(K)+":"
4090 NEXT K
4100 NEXT J
4200 FOR N=1 TO M
4300 PRINT#2,W$(N);S$(N)
4350 S$(N)=""
4360 R$(N)=""
4400 NEXT N
```

```
4410 Z=1
4500 RETURN
5000 REM Subroutine to test property abundance then pass on
5002 PRINT P$
5004 INPUT#1,L$,M
5010 FOR L=1 TO M
5020 INPUT#1,W$(L),T$(L)
5030 NEXT L
5040 FOR J=1 TO X
5050 FOR K=1 TO M
5060 PRINT "Enter hor ";J;T$(K);
5065 INPUT R$(K)
5071 IF T$(K)="MOTABUND" AND R$(K)="1" THEN GOTO 5173
5080 IF T$(K)="MOTABUND" AND R$(K)="" THEN GOTO 5173
5082 IF T$(K)="SMOTABUND" AND R$(K)="1" THEN GOTO 5173
5090 IF T$(K)="SMOTABUND" AND R$(K)="" THEN GOTO 5173
5093 IF T$(K)="COATABUND" AND R$(K)="1" THEN GOTO 5173
5100 IF T$(K)="COATABUND" AND R$(K)="" THEN GOTO 5173
5104 IF T$(K)="STABUND" AND R$(K)="1" THEN GOTO 5173
5120 IF T$(K)="STABUND" AND R$(K)="" THEN GOTO 5173
5130 IF T$(K)="ROOTABUND" AND R$(K)="1" THEN GOTO 5173
5140 IF T$(K)="ROOTABUND" AND R$(K)="" THEN GOTO 5173
5150 GOTO 5185
5173 FOR O=1 TO M
5176 U$(O) = U$(O)+":"
5178 NEXT O
5179 K=M
5180 GOTO 5190
5185 U$(K) = U$(K)+R$(K)+":"
5190 NEXT K
5200 NEXT J
5210 FOR N=1 TO M
5300 PRINT#2,W$(N);U$(N)
5350 U$(N)=""
5360 R$(N)=""
5400 NEXT N
5410 Z=1
5500 RETURN
6000 REM Subroutine to check for hue or pass on
6002 PRINT P$
6004 INPUT#1,L$,M
6010 FOR L=1 TO M
6020 INPUT#1,W$(L),T$(L)
6030 NEXT L
6040 FOR J=1 TO X
6050 FOR K=1 TO M
6060 PRINT "Enter hor ";J;T$(K);
6070 INPUT R$(K)
6071 IF T$(K)="PEDHUE" AND R$(K)="" THEN GOTO 6173
6072 IF T$(K)="BNDDIST" AND R$(K)="" THEN GOTO 6173
6076 IF T$(K)="RUBHUE" AND R$(K)="" THEN GOTO 6173
6080 GOTO 6185
6173 FOR O=1 TO M
6176 U$(O) = U$(O)+":"
6178 NEXT O
```

```
6179 K=M
6180 GOTO 6190
6185 U$(K) = U$(K)+R$(K)+":"
6190 NEXT K
6200 NEXT J
6210 FOR N=1 TO M
6300 PRINT#2,W$(N);U$(N)
6350 U$(N)=""
6360 R$(N)=""
6400 NEXT N
6410 Z=1
6500 RETURN
9980 PRINT P$
9981 PRINT "Enter number of lines "
9982 INPUT N:IF N=0 THEN GOTO 9990
9983 FOR I=1 TO N
9984 PRINT "LINE ";I;
9985 INPUT A$
9986 PRINT#2,"$ ";A$
9987 NEXT I
9990 PRINT#2,""
9992 PRINT "Enter another profile (Y/N)"
9994 INPUT A$
9995 CLOSE#1
9996 IF A$="Y" OR A$="y" THEN s=1 ELSE GOTO 10010
9998 GOTO 15
9999 GOTO 10010
10000 PRINT "An error has been detected"
10001 PRINT "re-enter this profile"
10002 PRINT "Edit output file OUTPUT.DAT"
10010 CLOSE#2
11000 END
```

Appendix 2 - Input file for ENTER.BAS (Full card)

```
"%1 ","PROFILE"                                    !  THESE LINES
"%1 ","PROJECT"                                    !   ARE NOT
"%1 ","DATE"                                       !    TO BE
"%1 ","AUTHOR"                                     !
"%1 ","LABNO"                                      !    DELETED
"%2 ","SURVEY_CODE"
"%2 ","SURVEY_FREE"
"%2 ","COUNTY"
"%3 ","TYPEQ"
"%4 ","SERIES"
"%4 ","NZG_CODE"
"%5 ","MAP_SERIES_CODE"
"%5 ","MAP_NUMBER"
"%5 ","GRID_EASTING"
"%5 ","GRID_NORTHING"
"%5 ","RAINFALL"
"%5 ","TEMPM"
"%5 ","TEMPW"
"%5 ","TEMPC"
"%5 ","ALTITUDE"
"%5 ","SPARE2"
"%6 ","ELEMENT"
"%6 ","LANDFORM"
"%6 ","LANDSCAPE"
"%6 ","LANDFORM_GENESIS"
"%7 ","MICRO_RELIEF"
"%7 ","SLOPE_SHAPE"
"%7 ","SLOPE_FACET"
"%7 ","SLOPE_ANGLE"
"%7 ","SLOPE_LENGTH"
"%7 ","SLOPE_ASPECT"
"%7 ","ROCK_COVER"
"%7 ","STONE_COVER"
"%7 ","STONE_SIZE"
"%7 ","STONE_KIND"
"%7 ","OVERSOWN Y or N"
"%7 ","FERTILISED Y or N"
"%7 ","PLOUGHED Y or N"
"%7 ","IRRIGATED Y or N"
"%7 ","DRAINED Y or N"
"%7 ","SUBSOILED Y or N"
"%7 ","EROSION_CONTROL_WIND Y or N"
"%7 ","EROSION_CONTROL_WATER Y or N"
"%8 ","SLOPE_MOVEMT_AREA"
"%8 ","SLOPE_MOVEMT_TYPE"
"%8 ","EROSION_%"
"%8 ","FLOODING"
"%8 ","DRAINAGE"
"%8 ","LANDUSE"
"%8 ","VEGTYPE"
"%9 ","VEGETATION_FREE_FMT"
```

```
"%10 ","PMWEATH"
"%10 ","PMCONSIST"
"%10 ","PMCEMENT"
"%10 ","PMJOINT"
"%10 ","PARENT_ROCK_MODIFIER"
"%10 ","PARENT_ROCK"
"%11 ","PR_FREE"
"%0 ","HORIZONS DATA"
"%14 ","DESIGNATION"
"%17 ","THICKNESS"
"%0 ","Depth top hor 1"
"%0 ","BASE"
"%18 ","MOISTURE"
"%0 ","COLOUR"
"%0 ",3
"%19 ","MATHUE"
"%20 ","MATVALUE"
"%21 ","MATCHROMA"
"%0 ","PEDCOLOUR"
"%0 ",3
"%22 ","PEDHUE"
"%23 ","PEDVALUE"
"%24 ","PEDCHROMA"
"%0 ","RUBCOLOUR"
"%0 ",3
"%25 ","RUBHUE"
"%26 ","RUBVALUE"
"%27 ","RUBCHROMA"
"%0 ","MOTTLES"
"%0 ",6
"%28 ","MOTABUND"
"%29 ","MOTSIZE"
"%30 ","MOTCONT"
"%31 ","MOTHUE"
"%32 ","MOTVALUE"
"%33 ","MOTCHROMA"
"%0 ","SEC_MOTTLES"
"%0 ",6
"%70 ","SMOTABUND"
"%71 ","SMOTSIZE"
"%72 ","SMOTCONT"
"%73 ","SMOTHUE"
"%74 ","SMOTVALUE"
"%75 ","SMOTCHROMA"
"%0 ","TEXTURE"
"%0 ",2
"%34 ","TEXTMOD"
"%35 ","TEXTURE"
"%0 ","STRUCTURE"
"%0 ",7
"%36 ","PGRADE"
"%37 ","PSIZE"
"%38 ","PTYPE"
"%39 ","LINK"
"%40 ","SGRADE"
```

```
"%41 ","SSIZE"
"%42 ","STYPE"
"%43 ","STICKINESS"
"%44 ","PLASTIC"
"%45 ","CONSIST"
"%46 ","SOILSTR"
"%47 ","PEDSTR"
"%48 ","FAILURE"
"%49 ","CEMENT"
"%50 ","PENRES"
"%0 ","COATINGS"
"%0 ",6
"%51 ","COATABUND"
"%52 ","COATDIST"
"%53 ","COATTYPE"
"%54 ","COATHUE"
"%55 ","COATVALUE"
"%56 ","COATCHROMA"
"%0 ","PANS"
"%0 ",2
"%57 ","PANCONT"
"%58 ","PANKIND"
"%0 ","ROOTS"
"%0 ",2
"%59 ","ROOTABUND"
"%60 ","ROOTSIZE"
"%0 ","STONES"
"%0 ",5
"%61 ","STABUND"
"%62 ","STWEATH"
"%63 ","STROUND"
"%64 ","STSIZE"
"%65 ","PARENTCODE"
"%0 ","BOUNDARIES"
"%0 ",2
"%66 ","BNDDIST"
"%67 ","BNDSHAPE"
"%0 ","NOTES"
```

Appendix 3 - output file from ENTER.BAS (Full Card)

```
%1 SPG1:1277:1234:25-AUG-87:KWV MDL::
%2 SCOV::WAIKATO:
%3 silt loam:
%4 KAIHERE:YB:
%5 1:P05:2345678:9876543:1677:15.1:16.1:10.8:300::
%6 2:F:5:J:
%7 1:2:3:21:105:096:::::Y:N:Y:N:Y:N:::
%8 ::::3:A:3:
%9 GRASSES:
%10 2:4:2:3:F:V:
%11 BASALTIC TUFF:
%14 Ap:Bg:Cw:
%17  0 , 12 : 12 , 45 : 45 , 78 :
%18 1:2:2:
%19 10YR:2.5Y:10YR:
%20 3:5:6:
%21 2:3:8:
%22 :::
%23 :::
%24 :::
%25 :::
%26 :::
%27 :::
%28 :2::
%29 :2::
%30 :3::
%31 :10YR::
%32 :6::
%33 :8::
%70 :::
%71 :::
%72 :::
%73 :::
%74 :::
%75 :::
%34 :1:1:
%35 U:Y:T:
%36 1::2:
%37 ::3:
%38 ::4:
%39 ::2:
%40 ::3:
%41 ::4:
%42 ::2:
%43 1:2:3:
%44 3:2:1:
%45 3:2:1:
%46 1:2:3:
%47 1:2:3:
%48 3:2:1:
%49 1:2:3:
%50 3:4:2:
```

```
%51 :2::
%52 :2::
%53 :2::
%54 :10YR::
%55 :7::
%56 :8::
%57 :::
%58 :::
%59 2:::
%60 2:::
%61 :::
%62 :::
%63 :::
%64 :::
%65 :::
%66 2:::
%67 2:::
$ THIS IS A NOTE
$ THIS IS ANOTHER NOTE
```

Appendix 4 - Changes GWBASIC/BASICA version of ENTER.BAS

Lines to delete, modified for GWBASIC/BASICA version of ENTER.BAS

```
** DELETE LINE 7 **
1221 DIM R$(9)
1222 DIM S$(9)
1223 DIM T$(9)
1224 DIM U$(9)
1225 DIM V$(9)
1226 DIM W$(9)
```

Appendix 5 - File correction program - Husky to MS-DOS PC, RT-11

```
10 PRINT "Input File:";
20 INPUT A$
30 PRINT "Output File:";
40 INPUT B$
50 OPEN A$ FOR INPUT AS #1
60 OPEN B$ FOR OUTPUT AS #2
70 LINE INPUT #1, A$
80 PRINT#2, A$
90 IF EOF(1) THEN GOTO 110
100 GOTO 70
110 CLOSE #1: CLOSE #2: END
```

Appendix 6 - Command file generated by SPGDTR

```
$ SET NOVERIFY
$ DATA
SET DICTIONARY CDD$TOP.DTR$USERS.GR.SOIL_BUREAU.SOIL_DATA
DEFINE FILE OLDSITES
DEFINE FILE OLDHORIZONS
READY OLDSITES SHARED WRITE, OLDHORIZONS SHARED WRITE
SET NO PROMPT
DISPLAY '1234  1277  '
STORE OLDSITES USING BEGIN
PROFILE                          = '1277'
PROJECT                          = '1234'
DATE_OBSERVED                    = '25-AUG-87'
AUTHOR                           = 'KWV MDL'
SURVEY_CODE                      = 'SCOV'
COUNTY                           = 'WAIKATO'
TYPE_QUALIFIER                   = 'silt loam'
SOIL_SERIES_NAME                 = 'KAIHERE'
NZG                              = 'YB'
MAP_SERIES_CODE                  = '1'
MAP_NUMBER                       = 'P05'
EAST                             = '2345678'
NORTH                            = '9876543'
ANNUAL_RAIN                      = '1677'
MEAN_ANNUAL_TEMP                 = '15.1'
MEAN_TEMP_WARM_MONTH             = '16.1'
MEAN_TEMP_COLD_MONTH             = '10.8'
ALTITUDE                         = '300'
ELEMENT                          = '2'
LANDFORM                         = 'F'
LANDSCAPE                        = '5'
LANDFORM_GENESIS                 = 'J'
MICRO_RELIEF                     = '1'
SLOPE_SHAPE                      = '2'
SLOPE_FACET                      = '3'
SLOPE_ANGLE                      = '21'
SLOPE_LENGTH                     = '105'
SLOPE_ASPECT                     = '096'
OVERSOWN                         = 'Y'
FERTILISED                       = 'N'
PLOUGHED                         = 'Y'
IRRIGATED                        = 'N'
DRAINED                          = 'Y'
SUBSOILED                        = 'N'
PROFILE_DRAINAGE                 = '3'
LAND_USE                         = 'A'
VEGETATION_TYPE                  = '3'
VEGETATION_SPECIES               = 'GRASSES'
PARENT_MATERIAL_WEATHERING       = '2'
PARENT_MATERIAL_CONSISTENCE      = '4'
PARENT_MATERIAL_CEMENTATION      = '2'
PARENT_MATERIAL_JOINT            = '3'
PARENT_ROCK_MODIFIER             = 'F'
```

```
PARENT_ROCK                          = 'V'
PARENT_ROCK_FREE_FORMAT              = 'BASALTIC TUFF'
NUMSTR =      2
END
FIND OLDSITES WITH IDENT = '1234  1277  '
SELECT 1
FIND NOTES
SELECT    1
MODIFY USING
LINE = 'THIS IS A NOTE
       '
SELECT    2
MODIFY USING
LINE = 'THIS IS ANOTHER NOTE
       '
DISPLAY '1234  1277    HORNUM    1'
STORE OLDHORIZONS USING BEGIN
IDENTSTR = '1234  1277  '
HORNUM =    1
DESIGNATION                          = 'Ap'
DEPTH_RANGE                          = '    0   12'
MOISTURE                             = '1'
MATRIX_HUE                           = '10YR'
MATRIX_VALUE                         = '3'
MATRIX_CHROMA                        = '2'
TEXTURE                              = 'U'
PRIMARY_STRUCTURE_GRADE              = '1'
STICKINESS                           = '1'
PLASTICITY                           = '3'
CONSIST                              = '3'
SOIL_STRENGTH                        = '1'
PED_STRENGTH                         = '1'
FAILURE                              = '3'
CEMENTATION                          = '1'
PENETRATION_RESISTANCE               = '3'
LIVE_ROOTS_ABUNDANCE                 = '2'
LIVE_ROOTS_SIZE                      = '2'
BOUNDARY_DISTINCTNESS                = '2'
BOUNDARY_SHAPE                       = '2'
END
DISPLAY '1234  1277    HORNUM    2'
STORE OLDHORIZONS USING BEGIN
IDENTSTR = '1234  1277  '
HORNUM =    2
DESIGNATION                          = 'Bg'
DEPTH_RANGE                          = '   12   45'
MOISTURE                             = '2'
MATRIX_HUE                           = '2.5Y'
MATRIX_VALUE                         = '5'
MATRIX_CHROMA                        = '3'
MOTTLE_ABUNDANCE                     = '2'
MOTTLE_SIZE                          = '2'
MOTTLE_CONTRAST                      = '3'
MOTTLE_HUE                           = '10YR'
MOTTLE_VALUE                         = '6'
```

```
MOTTLE_CHROMA                    = '8'
TEXTURE_MODIFIER                 = '1'
TEXTURE                          = 'Y'
STICKINESS                       = '2'
PLASTICITY                       = '2'
CONSIST                          = '2'
SOIL_STRENGTH                    = '2'
PED_STRENGTH                     = '2'
FAILURE                          = '2'
CEMENTATION                      = '2'
PENETRATION_RESISTANCE           = '4'
COATINGS_ABUNDANCE               = '2'
COATINGS_DISTINCTNESS            = '2'
COATINGS_TYPE                    = '2'
COATINGS_HUE                     = '10YR'
COATINGS_VALUE                   = '7'
COATINGS_CHROMA                  = '8'
END
DISPLAY '1234  1277    HORNUM    3'
STORE OLDHORIZONS USING BEGIN
IDENTSTR = '1234  1277  '
HORNUM =    3
DESIGNATION                      = 'Cw'
DEPTH_RANGE                      = '   45   78'
MOISTURE                         = '2'
MATRIX_HUE                       = '10YR'
MATRIX_VALUE                     = '6'
MATRIX_CHROMA                    = '8'
TEXTURE_MODIFIER                 = '1'
TEXTURE                          = 'T'
PRIMARY_STRUCTURE_GRADE          = '2'
PRIMARY_STRUCTURE_SIZE           = '3'
PRIMARY_STRUCTURE_TYPE           = '4'
STRUCTURE_LINK                   = '2'
SEC_STRUCTURE_GRADE              = '3'
SEC_STRUCTURE_SIZE               = '4'
SEC_STRUCTURE_TYPE               = '2'
STICKINESS                       = '3'
PLASTICITY                       = '1'
CONSIST                          = '1'
SOIL_STRENGTH                    = '3'
PED_STRENGTH                     = '3'
FAILURE                          = '1'
CEMENTATION                      = '3'
PENETRATION_RESISTANCE           = '2'
END
```

Appendix 7 - KERMIT commands - quick guide

1. KERMIT - invoke KERMIT

2. EXIT - exit from KERMIT

3. STAT - gives the current status of the line for communications

4. HELP - gives a brief one line description of commands

5. The escape sequence to get back to the local computer is very important to remember - for the Husky it is CTL] followed by a C. The VAX escape sequence is CTL followed by a C.

6. CONNECT - connect to host computer

7. SERVER - put host computer into a mode where a file may be copied using GET or into a mode where in can receive a file using SEND.

8. GET - copy file from host computer to local computer

9. SEND - send a file form the local to the host computer

10. RECEIVE - put host computer into a mode where can receive a file from the local computer.

11. SET BAUD 4800 - set line speed to 4800 baud

Appendix 8 - A checklist of steps

1. Entry of data via ENTER.BAS for Husky or MS-DOS PC.

2. Transfer from Husky to MS-DOS PC and run file correction program - Appendix 5.

3. Transfer data from field computer or PC to VAX using KERMIT. Use a dedicated subdirectory for transfers

4. Edit files transferred directly from Husky for bugs (Z etc.)

5. Use SPGDTR to create a command file for reading into Datatrieve

6. Correct errors in original data file - rerun SPGDTR

7. Submit SPGDTR-generated command file to batch job

8. Check for errors in [username]commandfile.LOG

9. Correct errors in original data file - rerun SPGDTR and resubmit command file

10. Set default to directory to OLDHORIZONS.DAT and OLDSITES.DAT have been written.

11. Use :OLDINSERT to write OLDSITES.DAT and OLDHORIZONS.DAT to SITES.DAT and HORIZONS.DAT

12. Set default to main database subdirectory

13. Use :OPEN_PEEK, :COPY_PROFILES to merge new data into existing database

14. Delete all unnecessary files, ready for next data transfer

Appendix 9 - PRO-DTR operating instructions

P/OS version of SPG1 Database

A subset of the VAX SPG1 soil profile database has been setup for PRO-350s using P/OS and PRO-DTR. This subset should be sufficient for data entry and editing and gives data files which are directly equivalent to those used on the VAX. Procedures for generating final printout and for detailed searches are not included in the P/OS version as it is expected these functions would still use the VAX system after data is uploaded from the PRO-350.

The main difference between the VAX and PRO-datatrieve systems is that the "compile buffer space" used to hold the record definitions of readied domains etc is much more restricted on the latter and it the SITE and HORIZON domains can be used only by splitting them into components (SITE1 - SITE7, HORIZON1 - HORIZON6). The component domains all access the same data file but only recognize the specific fields for their own "block" of data. Domains are normally READYed and FINISHed within the standard procedures (:ALTER_NUMHOR, :STORECARD, :IDENTMOD, :CHECKPRINT, :REMOVE, :STOREHOR) as required and should not be separately readied before these procedures are run. Fortunately the PRO-350 READYs domains much more rapidly than the VAX (under typical loads) and the delays in these procedures are not too bad (the delays total about 3 minutes out of approx 15 minutes for entering a full profile description.

Entering Data (:STORECARD)

This procedure is very similar to the VAX SPG1 procedure. SPG1 data is entered of a standard card in response to computer prompts. The computer will prompt for data input and will validate the responses as on the VAX. Because each separate component domain has to be READYed each time there will be a delay of about 10 secs at the points where component domains change. Overall response is still better than the VAX under typical loads.

Procedures for storing auger descriptions are not distributed with the initial release but can be set up as required. It is a simple matter to create an auger procedure by just editing STORECARD so as to leave out unwanted fields but it would probably be more profitable to define a (smaller) subset of component domains to take advantage of the reduced dataset and so reduce the delay time for domain READYs.

Listing Data (:CHECKPRINT)

The PRO SPG1 system is not designed to generate complex reports or fully formatted profile printouts. The CHECKPRINT procedure is designed to provide a printout for proofreading and the format used reflects this. To use the procedure simply type :CHECKPRINT and respond with the IDENT for the profile required when requested. To produce a file for subsequent printout use the DATATRIEVE OPEN command before running CHECKPRINT. To get a listing of a number of profiles without sitting at the screen all the time put the commands into a file and execute this file from DATATRIEVE. However PRO datatrieve does not accept "terminal" input from the command file so you cannot put the idents in in the normal way if you do this. To get round this problem there is a procedure called CHIDPRINT which is identical to CHECKPRINT except that it takes the IDENT from a predeclared variable called CHID. Use CHIDPRINT as ibn the following example :
Create file called CHECK.CMD containing the following (use EDT or PROSE)

```
DECLARE CHID PIC X(12).
OPEN CHECK.LIS
CHID = '897   M123A'
:CHIDPRINT
CHID = '897   M124'
:CHIDPRINT
CHID = '897   M136'
:CHIDPRINT
CHID = '897   M137'
:CHIDPRINT
CHID = '897   M138'
:CHIDPRINT
CHID = '897   M139'
:CHIDPRINT
CHID = '897   M140'
:CHIDPRINT
CHID = '897   M142'
:CHIDPRINT
CHID = '897   M143'
:CHIDPRINT
CHID = '897   M144'
:CHIDPRINT
CLOSE
```

and then run this file from PRO/DTR by typing
@CHECK
and go away and do something else (CHIDPRINT will take about 5 minutes per profile).

Correcting Data (MODIFY, :ALTER_NUMHOR, :IDENTMOD, :STOREHOR, :REMOVE)

Correcting data on the PRO-DTR system is very similar to the VAX. Simple changes to data may be made by the MODIFY command. The main difference to the VAX system is that the appropriate domain (SITE1 - SITE7, HORIZON1 - HORIZON5) must be used. E.g. to change the SURVEY field of an existing profile (M134 in project 705) we could type

```
READY SITE2 SHARED MODIFY
FOR SITE2 WITH IDENT EQ '705   M134' MODIFY SURVEY
```

and enter the new value as prompted. When you have finished with SITE2 remember to type FINISH SITE2 to release the space occupied.

As with the VAX system special procedures are provided for more complex changes. These are

1. :ALTER_NUMHOR

   This procedure is used to increase or reduce the number of horizons in a profile. As with the VAX version the user will be prompted for the IDENT of the profile and the number of horizons required. If the number of horizons is increased the new horizons will be created but data will not be entered in this procedure (unlike the VAX version). Data should be entered subsequently using :STOREHOR.

2. :STOREHOR

   This procedure stores horizon data for existing horizons (e.g. created by :ALTER_NUMHOR). The PRO version differs from the VAX in that the user may opt to leave a block of horizons unchanged at the top of the profile. :STOREHOR will only prompt for data values for horizons below this block. (This feature is useful if the horizons to be entered were created by :ALTER_NUMHOR).

3. :IDENTMOD

   The IDENT field (which includes PROFILE and PROJECT number) cannot be changed by a simple MODIFY command as it is the primary index field and occurs in all SITE and HORIZON domains. As with the VAX system :IDENTMOD prompts for the old and new IDENTs and changes all SITE and HORIZON domains.

4. :REMOVE

   This procedure simply removes a profile from the database. :REMOVE prompts for the IDENT and erases the SITE and all HORIZONS for that IDENT.

All the above procedures READY domains as required and FINSH those domains before exiting. As with all the procedures provided they may fail if other domains, tables, etc are READY (and hence taking up

storage space) when they are entered. If this happens type FINISH and rerun procedure.

Appendix 10 - :OPEN_PEEK and :COPY_PROFILES

1. **OPEN_PEEK** - is a procedure which opens access to other directories or subdirectories to look at data. This was developed to open access to separate data sets, for example, the National Database or other data sets. It has the capability of network links but time delays on initial access are to be expected. OPEN_PEEK opens domains PEEK_SITES, PEEK_HORIZONS and PEEK_PROFILES which use the same definitions as the local database system. To invoke this procedure type

   DTR> **:OPEN_PEEK**
   Enter PEEK_DIR: **[SRGSWSM.TRANSFER]**

   To look at the data a collection must be formed in the usual way
   DTR> **FIND PEEK_PROFILES** - general search for all records
   [581 records found], or

   DTR> **FIND PEEK_SITES WITH SLOPE_ANGLE LT 4** - specific search
   [280 records found]

2. **COPY_PROFILES** - is a procedure which enables the current collection of profiles to be copied into your database. Form a collection and type:

   DTR> **:COPY_PROFILES**
   Enter Y to copy, N to omit, X to copy rest, Q to quit
   An ident prompt for each profile then appears.

DATA ENTRY PROGRAM FOR THE HUSKY HUNTER FIELD COMPUTER
(VERSION 2)
5-AUG-1988

Introduction

Several new features have been added since the original data entry program was written and distributed in 1987. The following explanatory notes are to be read in conjunction with NZ Soil Bureau Lasboratory Report SS14 and the Husky Hunter manual. The program has been modified to better suit field recording conditions. The new features include:

1. After the first profile has been entered the previous profile number is displayed (just before the prompt the next profile number).

2. It is now possible to enter SITES and HORIZONS fields in any order provided the input file format follows the program conventions (this will be outline later)

3. The entry program is especially designed with the auger description in mind. There is no longer a prompt for number of horizons but a prompt for horizon depths which once complete is terminated with a value of -999. The program then counts the number of horizons and prompts for other fields accordingly.

4. A HELP facility is available by pressing the PWR/HLP key while the program is running. The HELP information gives codes for key fields e.g. TEXTMOD, TEXTURE. The down and up arrows may be used to view all the help screen. Pressing the PWR/HLP a second time returns to the entry program.

5. Various validation traps help short-cut data entry. For example, if MATHUE has a null entry, the remaining fields for colour and mottles are not prompted for.

6. Structure for the first horizon may be recorded exclusively or for the entire profile.

7. The date is automatically entered for you.

INPUT FILES

There will be two input files on the Husky when you first get it, INPUT.DAT and INPUTA.DAT. INPUT.DAT is a "full card" file with all the fields. INPUTA.DAT is a shortened version typical of an auger input file. Use this as a guide. There are no backup copies of the program or input files on the Husky, however there are copies of these on my GRV account [SRGSWSM.HUSKY].

Editting ENTER.BAS, INPUT.DAT or INPUTA.DAT

Follow the instructions in the Husky manual for the use of EDIT and the instructions in NZ Soil Bureau Laboratory Report SS14. Remember to alter the first print statement at line 540 in ENTER.BAS to enter your own project number and author fields automatically.

Converting ENTER.BAS for use on IBM-compatible PC will require the following steps

1. Transfer program and input file to PC using KERMIT.

2. Edit program as follows.

   (a) Delete lines 95, 110, 130, 650 to 653, 3256 to 5180
   (b) Correct the following lines to read

```
120  DIM D$(12)
828  LINE INPUT A$
1010 DIM R$(16)
1020 DIM S$(16)
1030 DIM T$(16)
1040 DIM U$(16)
1050 DIM V$(16)
1060 DIM W$(16)
1100 IFP$="COLOUR"THEN GOSUB1710
1150 IFP$="TEXTURE"THEN GOSUB1510
1160 IFP$="STRUCTURE"THEN GOSUB1710
1180 IFP$="PANS"THEN GOSUB1510
1190 IFP$="STONES"THEN GOSUB1710
1200 IFP$="ROOTS"THEN GOSUB1710
3100 LINE INPUT NT$
```

3. Run using GWBASIC or BASICA

Format of input file - INPUTA.DAT

Any field may occur in any order and can successful be done using the following guidelines.

1. Always keep the prompts for an individual line in the same area, that is, all entries for SITE line "%7 ".

2. Individual fields within a SITE line may be deleted. The example below shows how the input file can flip from HORIZON to SITE to HORIZON fields respectively. Note the requirement for the key lines: "%0 ","SITE INFORMATION" and 1,"%0 ","HORIZONS DATA"

   Example:

```
"%0 ","BOUNDARIES"
"%0 ",2
"%66 ","BNDDIST"
"%67 ","BNDSHAPE"
"%0 ","SITE INFORMATION"
3,"%0 ","LINE"
1,"%3 ","TYPEQ"
2,"%0 ","LINE"
1,"%4 ","SERIES"
10,"%5 ","SPARE2"
4,"%0 ","LINE"
4,"%7 ","SLOPE_ANGLE"
6,"%7 ","SLOPE_ASPECT"
5,"%8 ","DRAINAGE"
1,"%9 ","VEGETATION_FREE_FMT"
6,"%0 ","LINE"
1,"%0 ","HORIZONS DATA"
"%0 ","NOTES"
```